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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,361	07/17/2003	Hiroshi Sumi	Q76615	8937

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EXAMINER
NORRIS, JEREMY C

ART UNIT	PAPER NUMBER
2841	

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/620,361	SUMI ET AL.	
	Examiner	Art Unit	
	Jeremy C. Norris	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Allowable Subject Matter

The indicated allowability of claims 10 and 11 is withdrawn in view of the new interpretation of the references. Rejections based on the new interpretation follow.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 4-6, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,217,989 (Brody) in view of JP 2000-67646 (Matsushita) and US 5,928,804 (Leddy).

Brody discloses, referring to figures 1-2, a wiring board comprising: a conductor layer (24) comprising Fe and Cu; and a circuit component (27), connected to the conductor layer through a joining member (20) which is obtained by coating a copper paste (see col. 1, lines 10-30) and simultaneously firing the ceramic green sheet and coated copper paste (see col. 1, lines 25-50). Brody does not specifically state that the copper paste comprises a copper powder, an organic vehicle and an Fe_20_3 particle [claim 1]. However, Matsushita discloses a copper paste comprising a copper powder ([0024]), an organic vehicle ([0016]) and an iron oxide particle ([0044]). Mausushita does not specifically state that the iron oxide is Fe_2O_3. However, it is well known to use Fe_2O_3 as a particle for forming a conductor as evidenced by Leddy (col. 19, lines 30-50). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to choose Fe_2O_3 as the iron oxide in the invention of Matsushita as is known in the art and evidenced by Leddy. The motivation for doing so would have been to use a known material suitable for conductor applications. Moreover, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin,* 125 USPQ 416. Moreover, it would have been obvious to one having ordinary

skill in the art at the time of invention to use the modified paste of Matsushita in the invention of Brody. The motivation for doing so would have been to form a conductor with consistent resistance even under high temperatures (Matsushita [0008]).

Additionally, the modified invention of Brody teaches, that a surface of the conductor layer is subjected to a plating treatment (see col. 1, lines 35-40) [claim 2], wherein the copper paste comprises more than 20 parts by mass of the organic vehicle per 100 parts by mass of the copper powder (see col. 4, lines 10-25) [claim 4], wherein the copper paste comprises a ceramic particle (Matsushita [0008]) having an average particle size of 100 nm or less (Matsushita [0008]-[0010]), formed of glass forming oxides (Matsushita [0015]) [claim 5], wherein the Fe_2O_3 particle has an average particle size of 1μm or less (Matsushita [0008]-[0010]) [claim 10].

Regarding claim 6, the method steps recited in the claim are process limitations within a device claim and thus are considered only to the extent to which said limitations impact the structure of the device. As such, since the modified invention of Brody teaches a wiring board according to claim 1 as described above, and claim 6 provides no further structural differences, the structure of claim 6 is rendered obvious. Moreover, it is well settled that even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product by process claim is the same as or obvious from a product of the prior art, the claims unpatentable even though the prior product was mad by a different process. *In re Thorpe*, 77 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir 1985). Aditionally the

Examiner notes that the modified invention of Brody teaches sintering in a nitrogen atmosphere at a peak temperature in the range of 850-1050° C (see col. 4, lines 45-60).

Claims 7, 8, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2000-67646 (Matsushita) in view of US 5,928,804 (Leddy).

Matsushita discloses a copper paste comprising a copper powder ([0024]), an organic vehicle ([0016]) and an iron oxide particle ([0044]). Mausushita does not specifically state that the iron oxide is Fe_2O_3 [claim 7]. However, it is well known to use Fe_2O_3 as a particle for forming a conductor as evidenced by Leddy (col. 19, lines 30-50). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to choose Fe_2O_3 as the iron oxide in the invention of Matsushita as is known in the art and evidenced by Leddy. The motivation for doing so would have been to use a known material suitable for conductor applications. Moreover, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin,* 125 USPQ 416.

Additionally, the modified invention of Matsushita teaches, wherein the copper paste comprises more than 20 parts by mass of the organic vehicle per 100 parts by mass of the copper powder (see table 1, [0046]-[0047]) [claim 8], which comprises a ceramic particle having an average particle size of 100 nm or less (Matsushita [0008]-[0010]) selected from glass forming oxides (Matsushita [0015]) [claim 9], wherein the

Fe_2O_3 particle has an average particle size of 1μm or less (Matsushita [0008]-[0010]) [claim 11].

Response to Arguments

Applicant's arguments filed 2 August 2006 have been fully considered but they are not persuasive. Applicant alleges that "Brody et al. does not teach a copper paste comprising a ceramic particle having an average particle size of 100 nm or less" (emphasis Applicant's). However, in the instant rejection, Matsushita is supplied to provide this teaching so Applicant's argument on this point is moot. Additionally, Applicant alleges "via 27 of Brody et al. is not at least one of a radiator, a connection terminal, a cover and a circuit component as required by present claim 1" (emphasis Applicant's). However, the via of Brody is indeed a part (i.e. a component) of an electrically conductive path (i.e. a circuit) and thus would be recognized by the ordinarily skilled artisan as a "circuit component" given the broadest plain meaning of the non-Applicant defined term. Regarding Matsushita, Applicant alleges "a conductive paste containing carbon black as the conductive powder which would not be suitable for firing" (emphasis Applicant's). However, carbon black is just one of several powders taught by Matsushita, others of which would indeed be suitable by firing, most notably, copper (see Matsushita [0024]). To ignore this teaching would be to not appreciate the entire teaching of the reference. Regarding Leddy, Applicant alleges "[t]his is a type of iron oxide microbead composite discussed at column 19, which electrode coating has nothing to do with providing a conductive paste comprising copper powder and a Fe_2O_3

particle". However, Leddy is only used to display the teaching of types of conductive iron oxide particles. Leddy describes that Fe_2O_3 is a conductive iron oxide particle and thus is pertinent to the problem of finding a conductive iron oxide. Regarding Applicant's arguments in reference to US 6,919,124 (Ito), the Ito reference has not been applied in the instant rejections and thus all arguments thereto are moot.

Having addressed each of Applicant's arguments, the traversal of the rejections on these grounds is deemed unsuccessful.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is 571-272-1932. The examiner can normally be reached on Monday - Friday, 9:30 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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JCSN